

**CLAIMS:**

What is claimed is:

1. A non-destructive method for evaluating the strength of cancellous bone,  
comprising the steps of:

5 providing a population of cancellous bone;

performing at least two of the following:

a manual compression test,

an apparent density test, and

an appearance test on each cancellous bone of said population of cancellous bone;

10 determining a compressive strength for each cancellous bone of said population of  
cancellous bone based on said at least two tests performed;

comparing said determined compressive strength of each cancellous bone against a  
predetermined compressive strength requirement; and

15 eliminating a subset of cancellous bone from said population of cancellous bone, which  
subset of cancellous bone fails to meet said predetermined compressive strength requirement.

2. The method for evaluating the strength of cancellous bone according to claim 1,  
wherein said manual compression test and said apparent density test are performed on each  
cancellous bone of said population of cancellous bone in order to determine said compressive  
20 strength.

3. The method for evaluating the strength of cancellous bone according to claim 1,

wherein said manual compression test and said appearance test are performed on each cancellous bone of said population of cancellous bone in order to determine said compressive strength.

4. The method for evaluating the strength of cancellous bone according to claim 1,  
5 wherein said apparent density test and said appearance test are performed on each cancellous bone of said population of cancellous bone in order to determine said compressive strength.

6. The method for evaluating the strength of cancellous bone according to claim 1,  
wherein said manual compression test, said apparent density test and said appearance test are  
10 performed on each cancellous bone of said population of cancellous bone in order to determine said compressive strength.

7. The method for evaluating the strength of cancellous bone according to claim 1,  
wherein said tests are performed on each of said cancellous bones after each of said cancellous  
15 bones have been freeze dried.

8. The method for evaluating the strength of cancellous bone according to claim 1,  
wherein said manual compression test includes the steps of:

manually compressing each of said cancellous bones to make a subjective determination of  
20 said compressive strength of each of said cancellous bones; and

removing a cancellous bone from said population of cancellous bones when said manually compressed cancellous bone appreciably deforms.

8. The method for evaluating the strength of cancellous bone according to claim 2,  
wherein said manual compression test includes the steps of:

manually compressing each of said cancellous bones to make a subjective determination of  
said compressive strength of each of said cancellous bones; and

5 removing a cancellous bone from said population of cancellous bones when said manually  
compressed cancellous bone appreciably deforms.

9. The method for evaluating the strength of cancellous bone according to claim 3,  
wherein said manual compression test includes the steps of:

10 manually compressing each of said cancellous bones to make a subjective determination of  
said compressive strength of each of said cancellous bones; and

removing a cancellous bone from said population of cancellous bones when said manually  
compressed cancellous bone appreciably deforms.

15 10. The method for evaluating the strength of cancellous bone according to claim 5,  
wherein said manual compression test includes the steps of:

manually compressing each of said cancellous bones to make a subjective determination of  
said compressive strength of each of said cancellous bones; and

20 removing a cancellous bone from said population of cancellous bones when said manually  
compressed cancellous bone appreciably deforms.

11. The method for evaluating the strength of cancellous bone according to claim 1,  
wherein said appearance test includes the steps of:

assessing a quality of each of said cancellous bones based on their individual appearance;

and

5 assigning each of said cancellous bones with a grade which designates a subjective quality  
assessment of each of said cancellous bones.

12. The method for evaluating the strength of cancellous bone according to claim 3,  
wherein said appearance test includes the steps of:

assessing a quality of each of said cancellous bones based on their individual appearance;

and

10 assigning each of said cancellous bones with a grade which designates a subjective quality  
assessment of each of said cancellous bones.

13. The method for evaluating the strength of cancellous bone according to claim 4,  
wherein said appearance test includes the steps of:

assessing a quality of each of said cancellous bones based on their individual appearance;

and

15 assigning each of said cancellous bones with a grade which designates a subjective quality  
20 assessment of each of said cancellous bones.

14. The method for evaluating the strength of cancellous bone according to claim 5, wherein said appearance test includes the steps of:

assessing a quality of each of said cancellous bones based on their individual appearance;

and

5 assigning each of said cancellous bones with a grade which designates a subjective quality assessment of each of said cancellous bones.

15. The method for evaluating the strength of cancellous bone according to claim 1, wherein said apparent density test includes the steps of:

cleaning each of said cancellous bones;

freeze drying each of said cancellous bones;

measuring the dimensions of each of said cancellous bones;

determining a volume of each of said cancellous bones from said measured dimensions;

weighing each of said cancellous bones;

15 determining an apparent density for each of said cancellous bones; and

determining said compressive strength of each of said cancellous bones based on said apparent density.

16. The method for evaluating the strength of cancellous bone according to claim 2, wherein said apparent density test includes the steps of:

cleaning each of said cancellous bones;

freeze drying each of said cancellous bones;

measuring the dimensions of each of said cancellous bones;

determining a volume of each of said cancellous bones from said measured dimensions;

weighing each of said cancellous bones;

determining an apparent density for each of said cancellous bones; and

5 determining said compressive strength of each of said cancellous bones based on said  
apparent density.

17. The method for evaluating the strength of cancellous bone according to claim 4,  
wherein said apparent density test includes the steps of:

10 cleaning each of said cancellous bones;

freeze drying each of said cancellous bones;

measuring the dimensions of each of said cancellous bones;

determining a volume of each of said cancellous bones from said measured dimensions;

weighing each of said cancellous bones;

15 determining an apparent density for each of said cancellous bones; and

determining said compressive strength of each of said cancellous bones based on said  
apparent density.

18. The method for evaluating the strength of cancellous bone according to claim 5,  
20 wherein said apparent density test includes the steps of:

cleaning each of said cancellous bones;

freeze drying each of said cancellous bones;

measuring the dimensions of each of said cancellous bones;

determining a volume of each of said cancellous bones from said measured dimensions;

weighing each of said cancellous bones;

determining an apparent density for each of said cancellous bones; and

5 determining said compressive strength of each of said cancellous bones based on said  
apparent density.

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